

## ABSTRACT

This invention provides a means to deposit thin films and coatings on a substrate using an electron beam generated plasma. The plasma can be used as an ion source in sputter applications, where the ions are used to liberate material from a target surface which can then condense on a substrate to form the film or coating. Alternatively, the plasma may be combined with existing deposition sources including those based on sputter or evaporation techniques. In either configuration, the plasma serves as a source of ion and radical species at the growing film surface in reactive deposition processes. The electron beam large area deposition system (EBELADS) is a new approach to the production of thin films or coatings up to and including several square meters.